

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
14 October 2004 (14.10.2004)

PCT

(10) International Publication Number  
**WO 2004/087256 A1**

(51) International Patent Classification<sup>7</sup>: **A61N 1/08**,  
1/36, 1/05, 1/378, A61B 5/11

CALDERON, Albert; Fabra i Puig 299-A4, E-08031  
Barcelona (ES).

(21) International Application Number:  
PCT/IB2004/001023

(22) International Filing Date: 2 April 2004 (02.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/460,275 2 April 2003 (02.04.2003) US

(71) Applicant: NEUROSTREAM TECHNOLOGIES INC.  
[CA/CA]; 2099 Lougheed Highway, Suite 301, Port Coquitlam, British Columbia V3B 1A8 (CA).

(72) Inventors: FASSIO, Marcelo, D., Barú; 159-15236  
36th Avenue, Surrey, B.C., V3S 2B3 (CA). HOFFER,  
Joaquin, A.; 241 Strong Road, Anmore, B.C., V5A  
1C1 (CA). CALDERON, Enric; 215-7082 Inlet Drive,  
Burnaby, B.C., V4W 2W1 (CA). JENNE, Gary, B.;  
25941 - 26th Avenue, Aldergrove, B.C., V4W 2W1 (CA).

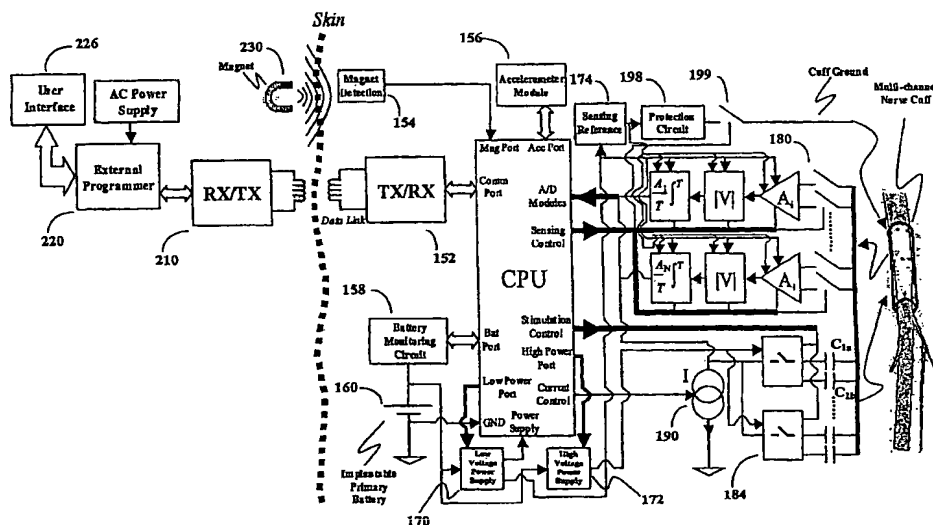
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:  
— with international search report

[Continued on next page]

(54) Title: IMPLANTABLE NERVE SIGNAL SENSING AND STIMULATION DEVICE FOR TREATING FOOT DROP AND OTHER NEUROLOGICAL DISORDERS



(57) Abstract: A fully implantable nerve stimulation system includes an event-triggered, closed loop control unit (50) that detects physiological events, e.g. occurrence of heel contact or toe lift event, from nerve signals through one or more nerve cuff electrodes and delivers stimulation pulses to a nerve to produce a desired physiological response. The stimulation system includes a low-noise, low-power nerve signal amplifier (180), accelerometers (156) that detect the orientation angle of a patient's thigh and a battery powered processor (150) that selectively powers components in the system to detect said physiological events and deliver said stimulation pulses with a minimum of battery power.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*